

Ohio Beef Cattle Supply & Genetics: An Overview



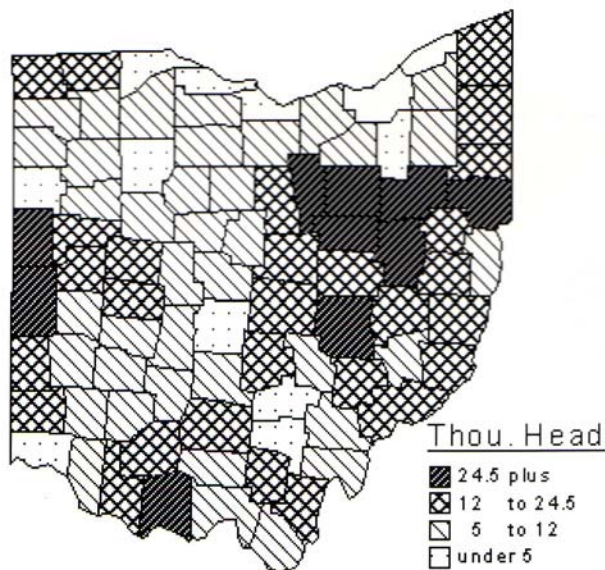
A Preliminary Report of The Negev Foundation

February 5, 2004

1. Overview

Ohio is a moderate producer of beef in the U.S., ranking about 25th among U.S. states. Although Ohio has about 17,000 beef producers, the Ohio beef production industry appears to be highly fragmented. Most of the herds are small (<100 head), and the average herd size is under 20 head (see table below). Most of the larger beef producers are in southern Ohio. There are many small dairy herds in northeastern Ohio, and a smaller number of larger herds in northwestern Ohio.

Cattle Inventory January 1, 2003



Source: 2002 Ohio Department of Agriculture. Ohio Agricultural Statistics. Annual Report.

Ohio's beef production shrunk over the past five years. The number of cattle (both beef and dairy) fell from 1,300,000 in 1998 to 1,220,000 at the beginning of 2003. The number of cattle operations (beef and dairy) fell from 30,000 to 26,000 during this same period; small beef cattle operations decreased from 17,240 to 15,800. This decline is due to retirement and to producers leaving the business because of smaller margins in recent years. Since the average cattle price rose from 1998 to 2001 (from \$650/head to \$870/head), the income produced by cattle also rose from \$845 million in 1998 to \$1.1 billion in 2001. In 2002, this income fell to \$982 million as the average price per head fell to \$810.^{1,2}

2. Breeds

Angus are Ohio's most prevalent beef breed, followed by Herefords and Simmentals. Most Ohio beef cattle are actually mixed breeds. Ohio producers also raise Holsteins for beef.

Nationally, about 20% of beef comes from Holsteins.^{3,4} (Holsteins raised as beef cattle taste similar to most beef breeds. Their meat is found in many U.S. supermarkets and restaurants. Most older Holsteins, once their milk production drops, become either hamburger or inexpensive steak varieties. USDA Prime beef generally comes from beef breeds; as such, most high-end white-tablecloth restaurants do not serve Holstein beef.) Holstein dressing percentage is lower than for beef breeds, since Holstein meat from is leaner and not as heavily muscled. Holsteins require more time to finish on feed than beef breeds. If slaughtered early, they do not grade as well.⁴

Bulls of all breeds are leaner (2.5-3%) and have a greater percentage of muscle than steers, and steers are leaner than heifers.⁴

Ohio cattlemen follow the common American practice of leaving beef calves with their mothers until weaning at 6-8 months.⁶ Holstein calves are taken from their mother right after birth, and weaned after four weeks.^{5,6}

3. Supply

Holsteins are faster, cheaper and easier to obtain than beef breeds. Holstein bull calves are abundant, since they do not produce milk and only a few are needed to maintain dairy herds.³ Holstein calves, taken from their mothers much earlier than beef breed calves, can have more uniformity in size and mass, and can all be vaccinated at the same time.⁵ An entire shipment of 250-lb calves could be ready in 12 weeks.⁶

It may be more difficult to find a sufficient number of suitable beef breed bull calves because of (1) variations in producer practices, (2) difficulty in convincing producers not to castrate bull calves, and (3) difficulty in convincing beef producers to wean and sell their calves much earlier than is customary. Beef producers are reluctant to wean calves earlier, because of cost—it costs

little more to feed a mother and calf than to feed a mother cow alone. Normally, producers wean calves at 205 days, when calves weigh close to 500 lbs (230 kg). If the Israelis want 250-lb (115-kg) calves, they would need to be weaned at 120 days. With beef breeds, one doesn't always know the ancestry. Some could be big-frame, cattle others small-frame. Some will do well, but some might not. Their vaccinations might be inconsistent as well.

Holstein/Angus Hybrids

Holstein heifers can be crossed with Angus bulls to produce hybrid calves specifically for the Israeli market.⁴ Holstein heifers are routinely crossbred with various beef breeds to keep them lactating. Hybrid calves can be raised and handled like dairy calves with feed and transport. They would have uniformity, could be controlled, and could be purchased easily when small. Their food conversion is more efficient than Holsteins. They are harder than Holsteins, so they are easier to ship. They could be kept for 12-14 weeks, and then flown at 250 lbs (113 kg).

Hybrids have 3%-5% greater dressing percentage at slaughter than Holsteins, but generally lower than beef breeds.

4. Prices

Beef steers, at 300-350 lbs (140-160 kg), sell for \$1.05-\$1.15/lb (\$2.31-\$2.53/kg). Selling younger and smaller beef calves would be unusual for beef producers, since the added expense to producers is small compared to the price gain during the additional 85 days. Therefore, they may still want to sell 120-day-old calves at or around the price of 205-day-olds. We should explore whether Ohio producers would be willing to discount their prices for smaller calves (\$350-\$360 instead of \$460 per calf?).

Holsteins, at 300-400 lbs (140-180 kg), sell for \$.77-\$.93/lb (\$1.69-\$2.05/kg). Holsteins at about 100 lbs (45 kg), when a few days old, sell for \$100-\$150 a head. They gain about 2 lbs (.9 kg) per day, but this can be adjusted.

Hybrid calves might sell for \$1 to \$1.25/lb.

5. Pre-Conditioning

“A vaccination, nutritional and management program designed to prepare young cattle to best withstand the stress of adjustment when they leave the point of origin and enter the channels of trade.”⁷

This is a very broad definition. Many people consider only the program after weaning to be pre-conditioning, so there is some confusion in the literature and among producers.

Pre-conditioning of beef calves is a common U.S. practice. The benefits to the seller are improved calf health and quality, and a price premium. Pre-conditioned calves can be weaned more quickly, which allows the heifers to return to top condition. Pre-conditioned calves can also be sorted more easily into uniform lots. One drawback to sellers is that heavier calves usually fetch lower prices per pound. Buyers benefit with calves that adapt quickly to the feedlot environment and feed, and fewer problems with Bovine Respiratory Disease Complex and shipping fever because of stronger immune systems.⁷ A recent Canadian study,⁸ however, contradicts some of the alleged benefits of pre-conditioning.

A good pre-conditioning program starts soon after birth, and continues past weaning until the calves are shipped. The first stage occurs shortly after birth, when calves are vaccinated against clostridial organisms. The second stage occurs 3-4 weeks before weaning, when the calves are vaccinated against other diseases (IBR, PI3, BVD, and BRSV). The third stage occurs at weaning, when they are again vaccinated against these diseases. The fourth and most extensive stage occurs 5 days after weaning. Calves are re-vaccinated, fed with a supplemental feed to gain weight, and acclimated to being around other calves and away from their mothers. Most beef calves are sold to feedlots at about 560 lbs (255 kg).⁷

In Ohio, beef breed calves from many different farms, and of (probably) different weights and breeds, will need to be pre-conditioned in one central location before shipping. The best-case scenario might be to obtain calves from several large producers rather than small numbers from many small producers.⁶

Holstein or Holstein/Angus hybrid calves could stay on their own farms until one or two days before being flown to Israel.

Whatever the breed and protocol, all calves would need to be examined by a USDA APHIS vet prior to being shipped.

6. Shipping

[We are still investigating prices and capacities, so what follows is incomplete and incompletely validated information. We are also preparing a detailed table that compares shipping costs of calves from Ohio, Eastern Europe and Australia. In general, small calves can be shipped only by air to Israel, as they are not sufficiently robust to travel by sea; large calves can be shipped by sea, but shipping them by air will probably be too expensive.]

Costs common to both include preconditioning (\$1.50 per day per calf for 45 days) and shipping from individual farms to a collection point and to the transportation point (\$12-\$15/head).⁶

By Sea

Up to 3,000 calves could probably be put on a livestock ship, of which there are currently five or six worldwide (all Belgian flagged). There is a risk of pneumonia, however, and they would need the right staff on board. Ocean transport would have to be limited to large calves, because

smaller calves would not hold up well during transport. Transit time would probably not count toward quarantine time in Israel. Shipping time is 14-21 days.

The major Belgian shipper, Dens Ocean Transport and Shipping, has one vessel with a capacity of about 1,500 cattle of 200 kg (441 lbs), and another vessel could take about 3,300 cattle of the same size. Shipments to the Mediterranean Sea normally depart from an East Coast port, such as Philadelphia, PA or Richmond, VA. They are not equipped to travel in the Great Lakes.⁹

Costs for shipping by sea:⁶

1,000 head @ 1,000 lbs each (or possibly 2,000 head at smaller size): \$250,000, or \$125-\$250/head

3,000 head @ 1,200 lbs each (or possibly 5,000 head at smaller size): \$500,000, or \$100-\$167/head.

There may be additional costs associated with ocean transport, including an ocean port quarantine that also supplies the feed and hay to go on the ship, medications and possibly other hidden costs.⁷

By Air

Up to 800 calves, weighing 250 lbs (113 kg) each, (or 200,000 lbs or 90,000 kg total) can fit into a 747-400. The calves would have to be delivered, loaded and strapped into rented FAA-approved shipping crates. They would also have to be accompanied by one or more animal care experts. The shipping cost is \$265,000, or about \$331/head.⁶

FedEx can fly 50 calves averaging 350 lbs (159 kg) in an MD-11, using the Instone penning system. The cost of a charter from Dayton to Israel is \$295,000, or about \$536/head.⁷ If only a question of weight [*we are still investigating these prices and capacities*], 550 350-lb calves weigh 192,500 lbs, which corresponds to 770 250-lb calves, at \$383/head.

If they could be flown from Dayton, land transportation would be minimal and inexpensive.

Ohio Beef Cattle: the Numbers

Year	Cattle & calves ¹	Cows & heifers that calved (beef/milk) ¹	Calves <500 lbs ¹	Value per head (calves & cattle) ¹	Total value ¹	Total production & marketing of calves & cattle (1,000s of lbs) ¹
1998	1,300,000	570,000	270,000	\$650	\$845,000,000	911,297,000
1999	1,220,000	530,000	260,000	\$730	\$891,000,000	838,809,000
2000	1,240,000	540,000	270,000	\$750	\$930,000,000	905,310,000
2001	1,240,000	540,000	260,000	\$800	\$992,000,000	865,288,000
2002	1,250,000	540,000	270,000	\$870	\$1,088,000,000	890,004,000
2003	1,220,000	520,000	240,000	\$810	\$988,000,000	

Year	Average calf price (per 100 lbs) ¹	Number of cattle operations (total) ¹	Number of beef cattle operations ¹	Number of dairy operations ¹	Number of <100 head operations (total) ²	Number of 100-500 head operations (total) ²
1998	\$66.00	30,000	17,700	6,000	26,800	3,030
1999	\$76.50	30,000	17,500	5,500	25,800	3,030
2000	\$94.70	29,000	17,000	5,700	24,800	3,020
2001	\$96.60	28,000	17,200	5,500	23,700	3,120
2002	\$78.50	27,000	17,000	5,200	22,700	3,100
2003		26,000	16,000	5,100		

Year	Number of >500 head operations (total) ²	Number of <100 head beef operations ²	Number of 100-500 head beef operations ²	Number of >500 head beef operations ²
1998	170	17,240	250	10
1999	170	16,770	220	10
2000	180	16,970	220	10
2001	180	16,800	190	10
2002	200	15,800	190	10
2003				

¹ Ohio Agricultural Statistics: Years 1998, 2000, 2002

² USDA-NASS Agricultural Survey: 1998-2003

References

¹Ohio Agricultural Statistics: 2002 Tables 23-26 and diagrams
www.nass.usda.gov/oh/masterd.pdf

²USDA-NASS Agricultural Survey: 1998-2003. Tables 7-20 and 7-23
http://www.usda.gov/nass/pubs/agr03/03_ch7.pdf (substitute 02, 01, 00, 99 for 03 in this reference to get previous year statistics).

³Notes from September 26, 2003 conference call: Steve Boyles (OSU/OSU Extension), Daniel Grosse (TerrAqua), Elizabeth Harsh (Ohio Cattlemen's Association/Ohio Beef Council), Bob Kallen (TerrAqua), Justin Lahmers (Ohio Cattlemen's Association/OSU Extension), Tim Sword (Ohio Department of Agriculture).

⁴Gene Steiner (Ohio cattleman), personal communication with Daniel Grosse (TerrAqua), December 3, 2003.

⁵Fanatico, A. *Dairy Beef*. Appropriate Technology Transfer for Rural Areas
<http://attra.ncat.org/attra-pub/PDF/dairybeef.pdf>

⁶Larry Baker (Baker Farms, Arcanum, OH), personal communication with Daniel Grosse (TerrAqua), September 25, 2003 and December 18, 2003.

⁷Dan Hinman, Extension Animal Nutritionist, University of Idaho, quoted in a University of Wisconsin Extension article:
<http://www.uwex.edu/ces/cwas/livestock/documents/preconditioningcalves2002.pdf>

⁸MacArthur, M. Preconditioning can be hard on calves. *The Western Producer*.
<http://www.producer.com/articles/20020411/livestock/20020411s03.html>

⁹E-mail from David Allaert (Dens Ocean Transport and Shipping, Zeebrugge, Belgium) to Daniel Grosse (TerrAqua), December 17, 2003.

¹⁰E-mails from Stan Heitz (Advance Genetic Exports, Bloomington, IL) to Larry Baker (Baker Farms, Arcanum, OH), December 17 and 23, 2003.